35 U.S.C. § 112, second paragraph

With regard to a possible objection to claims 4, 7, 10 and 11 under § 112, second paragraph, corresponding to one made in Ser. No. 09/711,064, it is noted that claims 4 and 7 are very normal, straightforward product-by-process claims, and claims 10 and 11 incorporate further limitations to the antibody claims based on the process by which they are made. The claims from which claims 4 and 7 depend are product claims, and such product-by-process claims, as well as products incorporating process definitions, can be used to define the scope of claims for which structure is difficult to define, in this case, for example, the polynucleotide sequence of the claimed antibodies. The antibodies themselves (e.g., claim 1) are claimed functionally, e.g., by defining the structure to which they bind, but an alternative description of the metes and bounds of the claim can be by defining a process by which they are made. See, e.g., M.P.E.P. § 2173.05(p): Claim Directed to Product-By- Process or Product:

> **I. PRODUCT-BY-PROCESS**
> There are many situations where claims are permissively drafted to include a reference to more than one statutory class of invention. A product-by-process claim, which is a product claim that defines the claimed product in terms of the process by which it is made, is proper. In re Moeller, 117 F.2d 565, 48 USPQ 542 (CCPA 1941); In re Luck, 476 F.2d 650, 177 USPQ 523 (CCPA 1973); In re Steppan, 394 F.2d 1013, 156 USPQ 143 (CCPA 1967); and In re Pilkington, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969). A claim to a device, apparatus, manufacture, or composition of matter may contain a reference to the process in which it is intended to be used without being objectionable under 35 U.S.C. 112, second paragraph, so long as it is clear that the claim is directed to the product and not the process.
>
> The fact that it is necessary for an applicant to describe his product in product-by-process terms does not prevent him from presenting claims of varying scope. Ex parte Pantzer, 176 USPQ 141 (Bd. App. 1972).

It is therefore respectfully submitted that these product-by-process claims are permissible alternative forms of the claims.

35 U.S.C § 112, first paragraph

It is submitted that Applicants have established, by citation of subsequent publications, that the disclosed and claimed antibodies have been proven to be useful as pharmaceutical compositions.

Applicants respectfully point out that, as disclosed in the specification, the sequence encoding

SCAH-2 was first isolated from a bladder tumor cDNA library (specification, page 7, lines 3-12), the preparation of which is described in the specification in Example I (page 35). This evidence indicates an association of SCAH-2 expression with cancer.

Applicants also respectfully direct the Examiner's attention to the enclosed paper (Reiter, R.E. et al. "Prostate stem cell antigen: A cell surface marker overexpressed in prostate cancer" Proc. Natl. Acad. Sci. USA (1998) 95:1735-1740). This post-filing reference discloses a protein having an amino acid sequence with 99% identity to SEQ ID NO:2 (differing only at the position of the "X" residue in SEQ ID NO:2), referred to as prostate stem cell antigen (PSCA). Like the other members of the Ly-6 family, PSCA is a GPI-anchored glycoprotein expressed on the cell surface (Reiter, page 1738). PSCA is predominantly prostate-specific in normal tissues and is overexpressed in over 80% of prostate cancers (Reiter, page 1739, column 1).

The data disclosed in this reference serve to confirm Applicants' assertion that SCAH-2 is a stem cell antigen, based upon the disclosed homology to chicken stem cell antigen-2 , the presence of conserved cysteine residues, and the identification of cDNAs encoding SCAH-2 in tumor tissues. This data also confirms that SEQ ID NO:4 is in fact translated into the polypeptide of SEQ ID NO:2, and that this polypeptide is involved in a human disease. Thus the one of skill in the art would readily understand that the claimed antibodies directed to such polypeptides would be useful in, for example, the screening and diagnosis of cancer, without any further experimentation.

Applicants note that the association of SCAH-2 with tumors and the use of SCAH-2 in screening, diagnosis and treatment of cancers was asserted in the specification at, for example, page 3, line 25 -page 4, line 8, and page 20, lines 18-21 wherein the specification states that "[s]ince a high level of expression of stem cell antigens is correlated with tumors from a variety of tissues and a more malignant phenotype, the SCAH-1 and SCAH-2 proteins can be used to identify antibodies, antagonists, and inhibitors which would diminish the efficiency of local tumor growth without inducing cell proliferation." Methods for diagnostic assays and drug screening are disclosed in the specification at, for example, pages 22-24. Antibodies specific for SCAH-2 are extensively discussed in the specification, e.g., on pages 22-23. Pharmaceutical compositions containing antibodies specific to SCAH-2 are disclosed, e.g., on page 30, lines 26-30.

Applicants further direct the Examiners attention to the enclosed paper (Saffran, D.C. et al., "Anti-PSCA mAbs inhibit tumor growth and metastasis formation and prolong the survival of mice bearing human prostate cancer xenografts" Proc. Natl. Acad. Sci. USA (2001) 98:2658-2663). This post-filing reference discloses monoclonal antibodies to the prostate stem cell antigen (PSCA) of Reiter et al., *supra*. As discussed on page 2660, anti-PSCA antibodies inhibit formation of PSCA-expressing prostate-cancer tumors. As discussed on page 2661, anti-PSCA antibodies were shown to retard the growth of tumors and prolong survival of tumor-bearing mice. As discussed on page 2662, anti-PSCA antibodies were shown to prevent formation of lung metastasis from tumors. And finally, as discussed on page 2663, "[t]hese observations, together with the results presented in this study, validate PSCA as an attractive target for immunotherapy in prostate cancer and demonstrate the potential therapeutic utility of anti-PSCA mAbs for the treatment of recurrent and metastatic disease." Clearly, Applicants disclosure of pharmaceutical uses for the claimed antibodies has been validated and confirmed.

Therefore, Applicants submit that any of the uses described above as well as in the specification, e.g., for screening, diagnosis, drug development, and treatment of cancers meets the utility requirements of 35 U.S.C. § 101 as well as the enablement requirement of § 112, first paragraph.

CONCLUSION

In light of the above amendments and remarks, Applicants submit that the present application is fully in condition for allowance, and request that the Examiner withdraw the outstanding rejections. Early notice to that effect is earnestly solicited.

If the Examiner contemplates other action, or if a telephone conference would expedite allowance of the claims, Applicants invite the Examiner to contact Applicants' Attorney at (650) 845-4639.

Applicants believe that no fee is due with this communication. However, if the USPTO determines that a fee is due, the Commissioner is hereby authorized to charge Deposit Account No. **09-0108. This form is enclosed in duplicate.**

Respectfully submitted,

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